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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/720,490	11/24/2003	Rama Divakaruni	FIS920000337US2 (14114A)	4561
23389	7590	05/21/2004	EXAMINER	
SCULLY SCOTT MURPHY & PRESSER, PC 400 GARDEN CITY PLAZA GARDEN CITY, NY 11530			LOKE, STEVEN HO YIN	
			ART UNIT	PAPER NUMBER
			2811	

DATE MAILED: 05/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/720,490

Applicant(s)

DIVAKARUNI ET AL.

Examiner

Steven Loke

Art Unit

2811

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 11/24/03
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed. The title should disclose the method to make the TTO nitride liner.

2. Claims 1 and 8 are objected to because of the following informalities: Claim 1, lines 18-19, the phrase "said collar oxide layer" has no antecedent basis. Claim 8, line 1, the phrase "said recessed deep trench conductor" has no antecedent basis.

Appropriate correction is required.

3. Claims 2, 4, 6 and 7 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The original specification never discloses the sacrificial oxide layer surrounding exposed sidewall and collar oxide regions as claimed in claim 2.

The original specification never discloses the nitride etch of step f) is selective to said sacrificial oxide when said sacrificial oxide layer is grown under the nitride liner as claimed in claim 4.

The original specification never discloses prior to forming said collar oxide regions a capacitor is formed in a bottom portion of said deep trenches as claimed in claim 6.

4. Claims 1-10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1, line 6, the phrase "a recessed deep trench conductor formed between said collar oxide regions" is unclear. Since claim 1 discloses a plurality of collar oxide regions formed on walls of the plurality of deep trenches, it is believed that a recessed deep trench conductor formed on each of said collar oxide regions in claim 1.

Claim 1, line 9, the phrase "said wall" is unclear whether is being referred to "one of said walls of each of the plurality of deep trenches"; line 13, the phrase "enclosing exposed sidewall and collar oxide regions" is unclear whether it is being referred to "enclosing an exposed sidewall of each of said trenches and each of said collar oxide regions"; line 18, the phrase "collar oxide" is unclear whether it is being referred to "each of said collar oxide regions"; lines 24-25, the phrase "exposed walls of said deep trenches" is unclear whether it is being referred to "an exposed wall of each of said deep trenches"; lines 25-26, the phrase "the walls of the deep trenches" is unclear whether it is being referred to "said walls of each of said deep trenches".

Claim 3, line 1, the phrase "selective to oxide and silicon" is unclear as to what is it meant.

Claim 4, lines 1-2, the phrase "selective to said sacrificial oxide" is unclear as to what is it meant.

Claim 7, lines 2-3, the phrase "said deep trenches" is unclear whether it is being referred to "each of said deep trenches".

Claim 10, lines 1-2, the phrase "a divot filled collar oxide region" is unclear whether it is being referred to a divot formed on each of the collar oxide regions.

5. Claim 1 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action.

6. The following is a statement of reasons for the indication of allowable subject matter: The major difference in the claims not found in the prior art of record is the steps of forming a nitride liner layer above a horizontal surface of said deep trench conductor and enclosing an exposed sidewall of each of said trenches and each of said collar oxide regions, and depositing top trench oxide (TTO) layer above said formed nitride liner layer.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven Loke whose telephone number is (571) 272-1657. The examiner can normally be reached on 7:50 am to 5:20 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Lee can be reached on (571) 272-1732. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

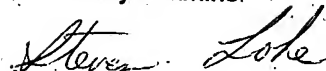
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May 16, 2004

Steven Loke
Primary Examiner

A handwritten signature in cursive script that reads "Steven Loke".